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cæformis, Michx., f., Hist. Arbres Amer., i., 211, t. 10; *Carya myristicæformis*, Nutt.)

With *Carya Texana*, C. DC., Ann. Sci. Nat. (IV), xviii., 33, I am entirely unacquainted.

The Herbaria are not without indications of additional forms to those I have been able to separate. Noteworthy among these is a specimen collected by Mr. Curtiss at Lookout Mountain, Tenn., and preserved in the National Herbarium. It is in fruit, and belongs, I suspect, to the group with thin husks. The fruit is oblong, an inch in length and strongly four-winged by the projecting edges of the involucre valves. The leaflets are uniformly seven, ovate-lanceolate, acuminate, and remarkably pale beneath, in which character it differs from all the species I know. There is a slight amount of pubescence on the rachis and midveins.

In the mountains of Sussex County, New Jersey, there occurs a form of *H. glabra*, which has more or less pubescence on the lower surfaces of the leaves, and particularly on the rachis at the base of the leaflets.

Bibliographical Notes on well known Plants.—IX.

BY EDWARD L. GREENE.

UNIFOLIUM.

I have recently, in a single short paragraph,* called attention to this, that neither the name *Smilacina*, which still holds place in our American books, nor *Tovaria*, adopted by Mr. Baker in his late comprehensive revision of the genus, is the lawful generic name of our stellate-flowered kinds of Solomon's Seal.

In the paragraph alluded to I suggested that *Polygonastrum*, Moench, must be older than *Smilacina*, Desf., and so it is; yet even Moench's name is three years later than *Tovaria*, Necker. Dr. Gray, who took exception to the use of *Tovaria* here, did so on the ground that, long before Necker, Adanson had framed the name *Tovara* for a certain ambiguous Polygonaceous type. But that which must more positively and indeed quite unquestionably displace *Tovaria*, as well as *Smilacina*, is the fact that Adanson himself recognized the genus and gave it the name *Vagnera*; so that this is older than *Tovaria* by twenty-seven

*Pittonia, i., 187.

years, and the latter is itself seventeen years older than *Smilacina*. There have been very few botanists of any note, since Linnæus, who were able to accept the Linnæan doctrine that *Polygonatum* and *Convallaria*, together with the plants now under consideration, are all of one genus; but the efforts of a number of authors to distinguish and separate them have resulted in a superfluity of generic names; for Mœnch seems to have ignored the work of Adanson, Desfontaines that of Mœnch and of Necker, while still later Rafinesque, with his pretty name, *Sigillaria*, would have superseded the other three. As for pre-Linnæan authorities, Tournefort and Boerhaave, while distinguishing our plants from *Polygonatum*, confound them with *Smilax*, whence Desfontaines took his suggestion of the name *Smilacina*; and the Linnæan view, that they are all phases of *Convallaria*, is one which Linnæus adopted from another set of earlier writers.

If our genus be limited to those species which have hexamerous flowers, and that is Adanson's position, *Vagnera* is clearly the name it will have to take. If, on the other hand, the two or three tetramerous species are to be included, *Vagnera* must yield to a still more ancient name, one which, although in use in the sixteenth and seventeenth centuries, is, by virtue of Adanson's adoption of it, rendered valid as a post-Linnæan name; that is *Unifolium*, and its priority over *Vagnera* is of place, not of time.

The following, then, appear to be the generic names and their dates; and the choice, it will be seen, lies between the two given by Adanson, if we admit but one genus; both of them being available, and obligatory on us if two genera be allowed.

UNIFOLIUM (Brunfels, 1530; Bock, 1552; Dodoens, 1583; Dillen, 1719; Haller, 1742), Adanson, Fam. ii. 54, 1763: *Maianthemum*, Weber, Prim. Fl. Holsat. 1780: *Evallaria*, Necker, Elem. iii. 147, 1790: species of *Convallaria*, Linn., Crantz, Miller, *et al.*, of *Smilax*, Tourn., Boerh., *et al.*

VAGNERA, Adanson, Fam. ii. 496, 1763: *Tovaria*, Necker, Elem. iii. 190, 1790; *Polygonastrum*, Mœnch, Meth. 637, 1794: *Smilacina*, Desf. Ann. Mus. Par., 1807: species of *Convallaria*, Linn., Crantz, *et al.*, of *Smilax*, Tourn., *et al.*

My view, which is that of the many botanists who have considered that the tetramerous species here sustain the same relation

to the hexamerous which exists between tetramerous and pentamerous or hexamerous species in many other genera of plants, assigns to the familiar northern species the following names :

UNIFOLIUM CANADENSE—*Maianthemum Canadense*, Desf.

UNIFOLIUM BIFOLIUM—*Convallaria bifolia*, Linn.

UNIFOLIUM TRIFOLIUM—*Convallaria trifolia*, Linn.

UNIFOLIUM STELLATUM—*Convallaria stellata*, Linn.

UNIFOLIUM SESSILIFOLIUM—*Smilacina sessilifolia*, Nutt.

UNIFOLIUM AMPLEXICAULE—*Smilacina amplexicaulis*, Nutt.

The name *Unifolium* seems as if it should indicate one-leaved plants, but there is no species of the genus which has strictly that character. The very type is two-leaved, and the other species bear three or more leaves to every stalk. Whence, then, this name? Dillen, who is but one of a long line of authors who adopted it, informs us* that it was suggested by the solitary leaf which, in the original species, comes up from the rootstock apart from the two-leaved proper stem. None of the many-leaved species display any such separate solitary leaf; but that failure can no more invalidate the name *Unifolium* than our considerable group of West American clovers, with leaflets numbering from five to nine instead of the usual three, can require a new and more strictly applicable name in the place of *Trifolium*.

On the Opening of Stomata.

It is a well-known fact that the stomata on the leaves and other organs of plants are found open at one time and closed at another; that they are open ordinarily when the plant is wet, closed when its moisture is largely withdrawn; and that the property of opening and closing is lost with the activity of the guard-cells.

Various hypotheses have been called in to explain the causes, as well as the manner, of this opening and closing. The one generally admitted at the present day is that of Schwendener.†

*Nova Plantarum Genera, p. 138.

† Ueber Bau und Mechanic der Spaltöffnungen. Monatsberichte der Academie der Wissenschaften zu Berlin, 1881, p. 883.